

What is claimed is:

1. A human monoclonal antibody specifically binding to a surface antigen of cancer cell membrane, said antibody being produced by a hybridoma obtained by cell fusion between human lymphocytes derived from cancer patient and mouse myeloma cells.

2. The human monoclonal antibody of Claim 1 wherein the variable region of the heavy chain of the antibody contains the amino acid sequences in Sequence Listing Nos. 13, 14, and 15.

3. The human monoclonal antibody of Claim 1 wherein the variable regions of the heavy and light chains of the antibody contain the amino acid sequences in Sequence Listing Nos. 16, 17, and 18, and 19, 20, and 21, respectively.

4. The human monoclonal antibody of Claim 1 wherein the variable regions of the heavy and light chains of the antibody are represented by the amino acid sequences in Sequence Listing Nos. 5 and 6 respectively.

5. The human monoclonal antibody of Claim 1 wherein the variable regions of the heavy and light chains of the antibody contain the amino acid sequences in Sequence Listing Nos. 22, 23, and 24, and 25, 26, and 27, respectively.

6. The human monoclonal antibody of Claim 1 wherein the variable regions of the heavy and light chains of the antibody are represented by the amino acid sequences in Sequence Listing Nos. 11 and 12 respectively.

5 7. An isolated DNA encoding the monoclonal antibody of Claim 1.

8. An isolated DNA encoding the monoclonal antibody of Claim 2.

10 9. The isolated DNA of Claim 8 wherein partial DNAs encoding the variable region of the heavy chain contains the base sequences in Sequence Listing Nos. 28, 29, and 30.

10. An isolated DNA encoding the monoclonal antibody of Claim 3.

15 11. The isolated DNA of Claim 10 wherein partial DNAs encoding the variable regions of the heavy and light chains of the antibody contain the base sequences in Sequence Listing Nos. 31, 32, and 33, and 34, 35, and 36, respectively.

20 12. An isolated DNA encoding the monoclonal antibody of Claim 4.

25 13. The isolated DNA of Claim 12 wherein partial DNAs encoding the variable regions of the heavy and light chains of the antibody are represented by the base sequences in Sequence Listing Nos. 3 and 4 respectively.

14. An isolated DNA encoding the monoclonal antibody of Claim 5.

15. The isolated DNA of Claim 14 wherein partial DNAs encoding the variable regions of the heavy and light chains of the antibody contain the base sequences in Sequence Listing Nos. 37, 38, and 39, and 40, 41, and 42, respectively.

16. An isolated DNA encoding the monoclonal antibody of Claim 6.

17. The isolated DNA of Claim 16 wherein partial DNAs encoding the variable regions of the heavy and light chains of the antibody are represented by the base sequences in Sequence Listing Nos. 9 and 10 respectively.

18. A hybridoma producing the monoclonal antibody of Claim 1.

19. A hybridoma producing the monoclonal antibody of Claim 2.

20. A hybridoma producing the monoclonal antibody of Claim 3.

21. A hybridoma producing the monoclonal antibody of Claim 4.

22. A hybridoma producing the monoclonal antibody of Claim 5.

23. A hybridoma producing the monoclonal antibody of Claim 6.

24. An anti-cancer formulation comprising the monoclonal antibody of Claim 1, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

5           25. An anti-cancer formulation comprising the monoclonal antibody of Claim 2, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

10           26. An anti-cancer formulation comprising the monoclonal antibody of Claim 3, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

15           27. An anti-cancer formulation comprising the monoclonal antibody of Claim 4, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

20           28. An anti-cancer formulation comprising the monoclonal antibody of Claim 5, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

29. An anti-cancer formulation comprising the monoclonal antibody of Claim 6, said antibody being bonded to the surface of a liposome enclosing an anti-cancer agent or toxin to cancer cells.

300A17